

## **REMARKS**

Claims 1, 2, 5-10, 11, and 14-28 are currently pending in this application. Claims 1, 2, 6, 8, 10, 11, 15, and 16 are amended. Claims 3, 4, 12, and 13 are cancelled. Claims 18-28 are added. No new subject matter has been added.

The drawings are amended in accordance with the Examiner's request.

Regarding the Information Disclosure Statement, Applicant hereby acknowledges receipt of a copy of the initialed and signed PTO Form 1449 submitted November 13, 2000, and thanks the Examiner for considering the included references.

In light of the foregoing amendments, and the following remarks, allowance of all the claims pending in the application is respectfully requested.

### ***Objection to the Drawings***

The drawings are objected to for containing unacceptable background marks. The Applicants request that the Examiner withdraw this objection in light of the set of formal drawings submitted in **APPENDIX A**.

### ***Rejections Under 35 U.S.C. § 102***

Claims 1-17 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,591,975 to Jack *et al.* ("Jack"). Applicants traverse this rejection because Jack does not disclose all the features of the claimed invention.

While the claims are distinguished over the cited art, Applicants have amended the claims solely in an effort to expedite prosecution of this matter. More specifically, claim 1 has been amended to recite the feature of determining an occurrence of a predetermined triggering event, and initiating an ambient reading of ambient NO<sub>x</sub> concentration present prior to a vehicle passing by a system for remote emissions sensing, the initiation of the ambient reading being based on the determination of the occurrence of the predetermined triggering event, among other things. Claim 10 has been amended to recite, among other things, means for determining an occurrence of a

## ***AMENDMENTS TO THE DRAWINGS***

Please replace Figure 1 and Figure 2 with the figures attached as **APPENDIX A**. These figures have been modified to remove the background marks as requested by the Examiner.

predetermined triggering event, and means for initiating an ambient reading of ambient NO<sub>x</sub> concentration present prior to a vehicle passing by the system, the initiation of the ambient reading being based on the determination of the occurrence of the predetermined triggering event by the means for determining.

In a preferred embodiment, a remote emission detector system may initiate an ambient reading of the ambient NO<sub>x</sub> concentration present just prior to each vehicle passing through the system (See the Specification at page 4, lines 20-22). The ambient reading may be initiated by a trigger event that causes the remote emission detector system to take the ambient reading (See the Specification at page 6, lines 3 and 4). The system may also take a reading of an exhaust plume associated with the vehicle as the exhaust plume passes through the beam (See the Specification at page 5, lines 3 and 4). The ambient reading may then be subtracted from the exhaust plume reading (See the Specification at page 5, lines 12-14).

Jack appears to teach a system that includes continuous chopped detection of clean air in front of a vehicle, and an exhaust plume trailing the vehicle (See Jack at column 6, lines 25 and 26; and at column 6 lines 34-39). Jack apparently discloses that upon detection of a vehicle passing through the system, output signals measured in the clean air immediately preceding the vehicle may be saved (See Jack at column 6, lines 35-39). Thus, Jack apparently suggests that readings of clean air should be taken at predetermined intervals (at the rate of the chopper), and that the most recent readings of the clean air may be stored and used in connection with a concentration calculation. However, Jack does not disclose determining an occurrence of a predetermined triggering event, and initiating an ambient reading of ambient NO<sub>x</sub> concentration present prior to a vehicle passing by a system for remote emissions sensing, the initiation of the ambient reading being based on the determination of the occurrence of the predetermined triggering event. For at least this reason, claims 1 and 10 are not anticipated by Jack.

In light of the foregoing, Applicant respectfully requests the allowance of claims 1 and 10. Further, claims 2, 6-9, 11, and 14-17 each depend from and add additional

features to one of independent claims 1 and 10. For at least this reason, Applicants respectfully submit that these dependent claims 2, 6-9, 11, and 14-17 are patentable over Jack.

### ***Newly Added Claims***

Claims 18-28 are newly added and have been included to further distinguish the claimed invention over the cited prior art. Independent claims 18 and 25 include the subject matter previously presented in dependent claims 8 and 17 in independent form.

More specifically, claim 18 includes the feature of subtracting a baseline intensity from the exhaust plume reading to compensate for changes in radiation intensity, wherein the baseline intensity is calculated using a substantially linear region over an absorption dip, among other things. Claim 25 recites, among other things, means for subtracting a baseline radiation intensity from an exhaust plume reading to compensate for changes in an intensity of a source beam of radiation, wherein the baseline intensity is calculated using a substantially linear region over an absorption dip.

In an exemplary embodiment, changes in an intensity of radiation may account for a shift between absorption signals in a remote emissions sensing system (See the Specification at page 7, line 8-10; and FIG. 2). The changes in intensity may occur for a variety of reasons, such as, shifts in ambient conditions (See the Specification at page 7, lines 11-13). Subtracting a baseline intensity from each signal may compensate for these shifts (See the Specification at page 7, lines 13 and 14). The baseline intensity may be derived, at least in part, from a substantially linear region above an absorption dip (See the Specification at page 7, lines 14-16; and FIG. 2). This may provide measurements of NO<sub>x</sub> with enhanced accuracy (See the Specification at page 7, lines 16-18).

While Jack apparently discloses a system that derives a baseline output using a reference signal associated with a spectral channel in which no atmospheric or automotive emission gases absorb (See Jack at col. 6, lines 9-12), Jack does not teach

*subtracting* a baseline intensity from the exhaust plume reading to compensate for changes in radiation intensity. Rather, Jack discloses:

The REF spectral channel thus operates to provide a baseline output which is independent of the molecular species (NO, H<sub>2</sub>O, CO<sub>2</sub>, CO and HC) being measured. The output of the REF spectral channel 32*f* is used to normalize, such as by *dividing*, the five molecular species spectral channels 32*a*-32*e*. (See Jack at col. 6, lines 19-26)(emphasis added).

Therefore, Jack is deficient at least for failing to disclose subtracting a baseline intensity from each exhaust plume reading to compensate for changes in radiation intensity, wherein the baseline intensity is calculated using a substantially linear region over an absorption dip.

In light of the foregoing, Applicant respectfully requests the allowance of claims 18 and 25. Further, claims 19-24 and 26-28 each depend from and add additional features to one of independent claims 1 and 10. For at least this reason, Applicants respectfully submit that these dependent claims 19-24 and 26-28 are patentable over Jack.

Having addressed each of the foregoing rejections, it is respectfully submitted that a full and complete response has been made to the outstanding Office Action and, as such, the application is in condition for allowance. Notice to that effect is respectfully requested.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Dated: September 13, 2004

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Sean L. Ingram', written over a horizontal line.

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